

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

AB
Pa

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
|-----------------|-------------|----------------------|---------------------|

09/401,660 09/23/99 NAKABAYASHI

M 684.2902

005514 MMC2/0816
FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK NY 10112

EXAMINER

CHANG, A
ART UNIT PAPER NUMBER

2872
DATE MAILED:

08/16/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/401,660

Applicant(s)

NAKABAYASHI ET AL.

Examiner

Audrey Y. Chang

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Prosecution Application

1. The request filed on June 19, 2001 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/401,660 is acceptable and a CPA has been established. An action on the CPA follows.
2. This Office Action is also in response to applicant's preliminary amendment filed on July 20, 2001, which has been entered as paper number 15.
3. By this amendment, the applicant has amended claims 9 and 10 and has newly added claims 15-20. Claims 1-20 remain pending in this application.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-9 and newly added claims 15-20 and claims 13-14 dependent therefrom are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Imamura et al (PN. 5,847,877) in view of the patent issued to Harris et al (PN. 5,208,700).

Imamura et al teaches a diffractive optical element having a plurality of grating surface structures (21 and/or 22), *serve as the first and the second diffraction grating*, that are formed at interfaces of different materials, *serve as the first and the second substrates*, having different refractive indices and different dispersions wherein the substrates (11 and 13 Figure 14)) are accumulated with a space (layer 12) there between, (please see Figures 11-15). Imamura et al teaches that the depth of the grating structure may be set to equal the value that is enabling the optical element to obtain 100 percent

Art Unit: 2872

diffraction efficiency for an m_0 order for a selected wavelength range, (please see columns 4 and 7 and Figures 10 and 19), and when such depth is set for the grating structures the maximum optical path length difference is equal to an integer multiple for each of the associated selected wavelength range.

This reference has met all the limitations of the claims with the exception that it fails to teach to include alignment patterns formed with the grating structures on the substrates for alignment purpose. However to use alignment markings formed on the optical elements in order to engage the optical elements in good alignment is rather a well known practice in the art as taught by the teachings of Harris et al. Harris et al teaches that the alignment markings may be formed on the surface of the substrate for a grating lens (14) and on the surface of the substrate for a lens (16) such that the corresponding recess of the alignment markings may be engaged and aligned in order to make the grating lens in good alignment with the lens, (please see column 3 lines 65 to column 4 lines 5). It would then have been obvious to one having ordinary skill in the art to apply the teachings of Harris et al to modify the diffractive optical element of Imamura et al to form alignment markings on the plurality of grating surface structures for the benefit of providing a better alignment. With regard to claims 6-8, and 17-20 although this reference (Harris et al) does not teach explicitly that the alignment markings are of the cited geometric shapes. However such modification is considered to be obvious matter of design choices to one having ordinary skill in the art since as long as the alignment markings are capable of engaging to each other to assure the alignment the shapes have no criticality.

With regard to claim 5, although Imamura et al does not teach explicitly that the grating structures are opposed to each other however this modification is considered to be an obvious matter of design choice to one skilled in the for the purpose of obtain a diffractive optical element with desired characteristics.

Art Unit: 2872

With regard to claims 13 and 14, Imamura et al teaches that the diffractive optical element may have the function of a lens, which is an optical system.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Imamura et al in view of Harris et al as applied to claim 1-4, 7-8 and 15-20 above, and further in view of the patent issued to Tomono (PN. 5,629,804).

The diffractive optical element taught by Imamura et al in combination with the teachings of Harris et al as described for claims 1-4, 7-8 and 15-20 above has met all the limitations of the claim with the exception that these references do not teach explicitly that the diffraction grating structures are formed by using a mold. However using a mold to form diffraction grating structure is a very common practice in the art as demonstrated by the teaching of the Tomono wherein a mold (3) having the desired grating pattern, i.e. the protrusions and recess, is pressed on the resin layer (12) to form the grating structure in the layer, (please see Figures 6-8). It would therefore have been an obvious modification to one skilled in the art to apply the teachings of Tomono to manufacture the diffractive optical element of Imamura et al since such method is well known in the art. Harris et al teaches that the alignment markings may be formed by photolithographic but other conventional means also may be applied to make such. This means that the alignment markings may also be formed by molding since molding process is also known in the art as conventional means. It would also have been an obvious modification to one skilled in the art to make the alignment markings fitted to each other during the molding process for the benefit of achieve good alignment during the molding process.

7. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Imamura et al in view of the patents issued to Harris et al and Tomono.

Imamura et al teaches a diffractive optical element having a plurality of diffraction grating structures formed at the interfaces of different grating layers with the protrusions and the recess of each pair of the grating layers engaged with each other, (please see Figures 11-15). Imamura et al does not teach explicitly that an alignment pattern is formed on the substrate with the diffraction grating structure. However to use alignment markings formed on the optical elements to engage the optical elements in good alignment is rather a well known practice in the art as taught by the teachings of Harris et al. Harris et al teaches that the alignment markings may be formed on the surface of the substrate for a grating lens (14) and on the surface of the substrate for a lens (16) such that the corresponding recess of the alignment markings may be engaged and aligned in order to make the grating lens in good alignment with the lens, (please see column 3 lines 65 to column 4 lines 5). It would then have been obvious to one having ordinary skill in the art to apply the teachings of Harris et al to modify the diffractive optical element of Imamura et al to form alignment markings on the plurality of grating surface structures for the benefit of providing a better alignment.

A grating manufacture process inherently makes the diffractive optical element of Imamura et al. However the Imamura et al reference does not teach explicitly that the process includes the use of a mold. But using a mold to make a diffraction grating is rather a well known practice in the art as demonstrated by the teaching of the Tomono wherein a mold (3) having the desired grating pattern, i.e. the protrusions and recess, is pressed on the resin layer (12) to form the desired grating structure in the layer upon a substrate layer, (please see Figures 6-8). It would therefore have been an obvious modification to one skilled in the art to apply the teachings of Tomono to manufacture the diffractive optical element of Imamura et al since such method is well known in the art. Furthermore, although Harris et al teaches that the alignment markings are formed by photolithographic means or other conventional means without specifying it to be molding process. However using molding process to make markings is considered to

Art Unit: 2872

be the conventional means in the art such modification would have been obvious to one skilled in the art. Furthermore, it would also have been an obvious modification to one skilled in the art to make the alignment markings fitted to each other during the molding process for the benefit of achieve good alignment during the molding process.

Double Patenting

8. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

9. Applicant is advised that should claims 1, 2, 6, 7 and 8 be found allowable, claims 15-20 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

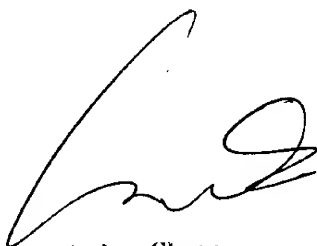
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where

Art Unit: 2872

this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

A. Chang, Ph.D.
August 13, 2001

A handwritten signature in black ink, appearing to read 'Audrey Chang', is positioned above the printed name and title.

**Audrey Chang
Primary Examiner
Technology Center 2800**